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10/528,457	10/18/2005	Stephan Schwartz	000009-008	4925

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EXAMINER	
DAVIS, PATRICIA A	

ART UNIT	PAPER NUMBER
1729	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

HARRY@WRB-IP.COM

Office Action Summary	Application No.	Applicant(s)	
	10/528,457	SCHWARTZ, STEPHAN	
	Examiner	Art Unit	
	PATRICIA DAVIS	1729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 October 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *30-60* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *30-60* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/20/10; 9/14/10; 9/18/10*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's Request for Reconsideration was received October 20, 2010. Claim 30 was amended.

2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on April 15, 2009.

Claim Rejections - 35 USC § 102

3. The claim objections under 35 U.S.C. 102(b) as being anticipated by Wariishi et al. (U.S. Pat. No. 6,416,899) on claims 30, 32, 34-38, 59 and 60 are withdrawn, because independent claim 30 was amended.

Claim Rejections - 35 USC § 103

4. Claims 30-43, 47-51, 59 and 60 rejected under 35 U.S.C. 103(a) as being unpatentable over Wariishi et al. (U.S. Pat. No. 6,416,899) (hereinafter "Wariishi") in view of Ren et al. (US 6,458,479) (hereinafter "Ren").

Regarding claim 30, Wariishi teaches a fuel cell stack comprising an electrolyte interposed by a cathode (22) and an anode (20), and supply passages (50, 52, 54, 56, 58 and 60 system of flow ducts) arranged to bring in a fuel gas (first reactant) that is brought into contact with the anode active surface and an oxygen-containing gas (second reactant) which is brought into contact with the cathode active surface, where

the fuel gas (first reactant) is distributed along a cell space partially defined by the anode active surface uniformly over an inlet region which extends along the anode active surface (20), and where the supply passages (50, 52, 54, 56, 58 and 60 system of flow ducts) are arranged in a collecting arrangement adapted to allow the flow outgoing the cell space leave the cell space within an outlet region (56, 58 and 60) separate from the inlet region (50, 52 and 54) (see col. 3, lines 26-59, col. 4, lines 57-65 and claim 13; figs. 1 and 3). Wariishi does not specifically teach wherein at least one of the inlet region and the outlet extends along at least approximately half of an extent of the at least one of the anode active surface and the cathode active surface.

However, Ren teaches a fuel cell with an inlet region and an outlet region (opening space in compression reinforcement bars 28, 29 combined with the current collectors 22, 24) (see col. 3, lines 59-65; fig. 1) that are adapted to allow a flow ingoing and outgoing from the cathode active surface and anode active surface to leave the cathode active surface and anode active surface within an outlet region (perforations) (see col. 3, line 45) which extends along at least half of the cathode active surface and at least half of the anode active surface. Although, Ren does not teach that the inlet and outlet regions are not formed directly on the cathode and anode active surfaces, they are formed indirectly. Further, the inlet and outlet regions must be in different places to allow for the fluid flow in the fuel cell system and the perforated areas covers 50% (half) of the sheet area (see col. 3, lines 43-55).

Therefore, it would have been obvious to one with ordinary skill in the art to incorporate an inlet and outlet region that extends along at least approximately half of

the cathode and anode active surface of Wariishi, because Ren teaches the perforations create an openness to allow the reactants to reach the catalyst layers and to allow the reaction product to leave the catalyst layers (see col. 3, lines 43-50).

Regarding claim 31, Wariishi does not specifically teach that the inlet region extends along at least approximately half of an extent of the at least one of the anode active surface and the cathode active surface.

However, Ren teaches a fuel cell, wherein the inlet region (22, col. 3, lines 45) extends along at least approximately half of the cathode active surface where the inlet region comprises perforations (col. 3, lines 48-51). The inlet region is interpreted by the Examiner to be the top 2 and a half rows of the current collectors (22, 24) and the outlet region is the remaining row and a half of the current collectors (22, 24).

Therefore, it would have been obvious to one with ordinary skill in the art to incorporate an inlet region that extends along at least approximately half of the cathode active surface, because Ren teaches the perforations create an openness to allow the reactants to reach the catalyst layers (see col. 3, lines 43-46).

Regarding claim 32, Wariishi teaches that the inlet region (50, 52 and 54) is located adjacent to a boundary of the anode active surface area (20) (see fig. 1).

Regarding claim 33, Wariishi does not specifically teach that the outlet region extends along at least half of at least one of the anode active surface and the cathode active surface.

However, Ren teaches a fuel cell, wherein the system of flow ducts comprises a collecting arrangement (opening space in compression reinforcement bar, 28, 29 and

current collectors 22, 24, col. 3, lines 59-65, Fig. 1) that are adapted to allow a flow outgoing from the cathode active surface to leave the cathode active surface within an outlet region (col. 3, lines 45) which extends along at least half of the cathode active surface where the outlet regions comprises perforations. The inlet region is interpreted by the Examiner to be the top 2 and a half rows of the current collectors (22, 24) and the outlet region is the remaining row and a half of the current collectors (22, 24).

Therefore, it would have been obvious to one with ordinary skill in the art to incorporate an outlet region that extends along at least approximately half of the cathode active surface of Wariishi, because Ren teaches the perforations create an openness to allow the reaction product to leave the catalyst layers (see col. 3, lines 43-50).

Regarding claim 34, Wariishi teaches that the outlet region (56, 58 and 60) is located adjacent to a boundary of the anode active surface area (20) (see fig. 1).

Regarding claim 35, Wariishi teaches that the inlet region (50, 52 and 54) and the outlet region (56, 58 and 60) are parallel to one another (see figs. 1 and 3).

Regarding claim 36, Warrishi teaches a collecting arrangement with a collecting chamber that extends along part of the anode active surface (20) with at least one outlet opening (56, 58 and 60) that allows flow from the anode active surface (20), the at least one outlet opening defines the outlet region (56, 58 and 60) (see Fig. 1 below). A chamber is defined as an enclosed area and the collecting chamber of Wariishi is partially enclosed, therefore it reads on the claim.

Regarding claim 37, Warrishi teaches a distribution arrangement with a distributing chamber that extends along part of the anode active surface (20) with at least one inlet opening (50, 52 and 54) that allows flow from the anode active surface (20), the at least one inlet opening (50, 52 and 54) defines the inlet region (see Fig. 1 below). A chamber is defined as an enclosed area and the collecting chamber of Wariishi is partially enclosed, therefore it reads on the claim.

Regarding claim 38, Wariishi teaches a wedge member (70) that is placed in the supply communication hole (inlet opening 100), where the wedge is designed to having a larger cross-sectional area in the fluid inlet side than toward the inlet side of the distribution chamber (see col. 7, lines 5-18; fig. 9).

Regarding claims 39-43, Wariishi does not specifically teach an active surface that extends essentially in a first plane and wherein the distribution chamber extends

essentially in a second plane, which second plane is essentially parallel to the first plane is located at a distance from the first plane, and wherein the distribution chamber extends at least partly over a region to which, in the first plane, the at least one of the anode active surface and the cathode active surface corresponds or a first layer, second layer, third and fourth layers.

However, Ren teaches a fuel cell, wherein the fuel cell is formed of a layer structure comprising: a first layer in which the cathode active surface (18, Fig. 1) is located and extends essentially in a plane; a second layer provided with an inlet opening/perforations (providing openings and a cavity) (22, Fig. 1) toward the distribution layer (28) and the second layer is essentially parallel to the first layer and is located at a distance from the first layer; third layer (compression reinforcement bar, 28, col. 3, lines 59-65, Fig. 1) comprises at least partly a through-cutout (cavity), where the second layer is located between the first layer and the third layer, the second layer and the third layer at least partly defining limiting surfaces for the distribution chamber/opening space in compression reinforcement bar; fourth layer (air side filter, 32, Fig. 1) at least partly defines a limiting surface for the distribution chamber.

Therefore, it would have been obvious to one with ordinary skill in the art to rearrange the parts of Wariishi in a layer structure, because Ren teaches it is possible to layer the parts for an active working fuel cell structure.

Regarding claim 47, Wariishi does not specifically teach a second layer at least partially defines a delimiting surface in the cell space at the at least one of th anode active surface and the cathode active surface, where the second layer at least partly

defines a delimitation between the cell space and the distribution chamber and wherein the second layer is provided with at least one opening, which at least one opening allows communication between the distribution chamber and the cell space and forms the at least one inlet opening.

However, Ren teaches a fuel cell, wherein the second layer (22, Fig. 1) at least partly defines a boundary surface in a cell space at the cathode active surface (18), and wherein the second layer at least partly defines a boundary between the cell space and the distribution chamber/opening space in compression reinforcement bar (28), and wherein the second layer (26) is provided with at least one opening/perforations, which at least one opening allows communication between the distribution chamber/opening space in compression reinforcement bar (28) and the cell space and forms the at least one inlet opening/perforations (col. 3, lines 42-51; fig. 1).

Therefore, it would have been obvious to one with ordinary skill in the art to incorporate the layers with openings in the fuel cell of Wariishi, because Ren teaches that this opening structure between the layers of the fuel cell system allows for the flow communication between the layers (see col. 3, lines 58-66).

Regarding claim 48, Wariishi does not specifically teach that the second layer is located at a distance from the at least one of the anode active surface and the cathode active surface.

However, Ren teaches a fuel cell, wherein the second layer (22) is located at a distance (18) from the cathode active surface (18) (fig. 1).

Therefore, it would have been obvious to one with ordinary skill in the art to incorporate a second layer distanced form the cathode active surface in Wariishi, because Ren teaches it creates room for flow of the reactants (see col. 3, lines 27-36).

Regarding claim 49, Wariishi does not specifically teach that the cell space is provided with a conductor adapted to bring current between the electrode and the second layer.

However, Ren teaches corrugations on the second layer which provides cell space with a current collector (conductor, 22, 24, Fig. 1, col. 3, lines 39-55) on the second layer which is adapted to conduct electric current between the electrode (18) and the second layer.

Therefore, it would have been obvious to one with ordinary skill in the art to incorporate a conductor in a cell space of Wariishi, because Ren teaches a cell space found in the second layer that is provided with a current collector to provide electric current between that layer an the electrode.

Regarding claim 50, Wariishi does not specifically teach that the conductor is resilient.

However, Ren teaches that the current collector (conductor 18) is corrugated into folds or ridges and valleys to give the metal current collectors mechanical strength (resilience) against bending stress arising from compressing the MEA, and the perforations allow for reactants to reach the catalyst layers (see col. 3, lines 38-48).

Therefore, it would have been obvious to one with ordinary skill in the art to incorporate metal current collectors with corrugations as conductors in the fuel cell

system of Wariishi, because Ren teaches that these corrugations of valleys and ridges are used for a strong mechanical strength in the fuel cell system.

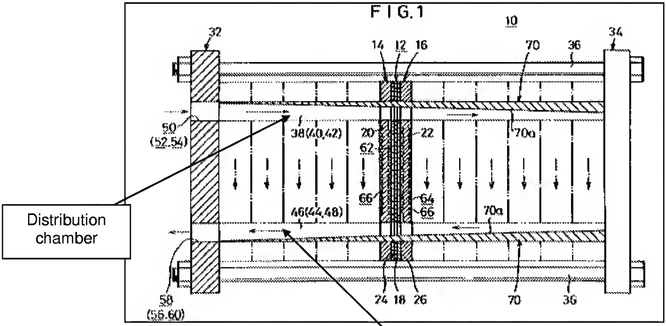
Regarding claim 51, Wariishi does not specifically teach that the conductor provides a flow pattern close to the lat least one of the anode active surface and the cathode active surface.

However, Ren teaches that the current collector (conductor 18) is corrugated into folds or ridges and valleys (flow pattern) to give the metal current collectors mechanical strength (resilience) against bending stress arising from compressing the MEA, and the perforations allow for reatants to reach the catalyst layers (see col. 3, lines 38-48).

Therefore, it would have been obvious to one with ordinary skill in the art to incorporate metal current collectors with corrugations as conductors in the fuel cell system of Wariishi, because Ren teaches that these corrugations of valleys and ridges are used for a strong mechanical strength in the fuel cell system and allow openness for flow.

Regarding claim 59, Wariishi teaches that the distribution arrangement is adapted to distribute flow incoming by the inlet region (50, 52 and 54) to both the anode (20) and cathode surfaces (22) (see col. 3, lines 26-59, col. 4, lines 57-65; figs. 1 and 3).

Regarding claim 60, Wariishi teaches a fuel cell stack, wherein at least one of the fuel cells is constructed according to claim 30 (see abstract, col. 3, lines 26-59, col. 4, lines 57-65 and claim 13; figs. 1 and 3).



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5. Claims 44-46 and 53-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wariishi in view of Ren and fu[illegible] Ren et al. (U.S. Pat. No. 6,296,964) (hereinafter "Ren'964").

Regarding claim 44, Wariishi does not specifically teach wherein the third layer with at least one distribution chamber, at least one collecting chamber and at least one cooling chamber.

However, Ren teaches a third layer with a distribution chamber/opening space in compression reinforcement bar (28) where the openings are defined for receiving an incoming and outgoing flow (see col. 3, line 59- col. 4, line 2; fig. 1)

Therefore, it would have been obvious to one with ordinary skill in the art to incorporate the layers with openings in the fuel cell of Wariishi, because Ren teaches that this opening structure between the layers of the fuel cell system allows for the flow communication between the layers (see col. 3, lines 58-66).

Ren does not specifically teach that the third layer contains a cooling chamber.

However, Ren'964 teaches a fuel cell stack where cooling plates are periodically interspersed between parts of the fuel cell assembly and that coolant is distributed in some manner across the cooling plates through bipolar plates in order to enhance the utilization of the direct methanol fuel cell (see col. 2, lines 16-20, col. 4, lines 29-37). Consequently, incorporation of a cooling chamber/bipolar plate to the fuel cell of Ren would be effective because it would enhance the utilization of the direct methanol fuel cell.

Therefore, it would have been obvious to one with ordinary skill in the art to incorporate a cooling chamber in the third layer of Ren, because Ren'964 teaches that adding a cooling chamber to a part of the fuel cell assembly would enhance the utilization of the direct methanol fuel cell.

Regarding claim 45, Wariishi does not specifically teach that the second layer defines a delimitation for the distribution chamber, the collecting chamber and the cooling chamber in one direction, and wherein the fourth layer at least partly defines a

delimitation for at least the distribution chamber and the collecting chamber in another direction.

However, Ren teaches a second layer (22) that defines a boundary on one side (one direction) of the distribution chamber and the collecting chamber (third layer 28) and wherein on the other side (other direction) the fourth layer (32) defines the other boundary of the chamber and the collecting chamber (third layer 28) (see fig. 1).

Therefore, it would have been obvious to one with ordinary skill in the art to incorporate this arrangement of parts to the fuel cell system of Wariishi, because Ren teaches that this arrangement describes a working direct methanol fuel cell (see col. 1, line 63-col. 2, line 6).

Ren does not specifically teach that the third layer has a cooling chamber that is bordered by the second and fourth layers.

However, Ren'964 teaches a fuel cell stack where cooling plates are periodically interspersed between parts of the fuel cell assembly and that coolant is distributed in some manner across the cooling plates through bipolar plates in order to enhance the utilization of the direct methanol fuel cell (see col. 2, lines 16-20, col. 4, lines 29-37). Consequently, incorporation of a cooling chamber/bipolar plate to the fuel cell of Ren would be effective because it would enhance the utilization of the direct methanol fuel cell.

Therefore, it would have been obvious to one with ordinary skill in the art to incorporate a cooling chamber in the third layer of Ren which would then have the second and fourth layers with defined delimitations, because Ren'964 teaches that

adding a cooling chamber to a part of the fuel cell assembly would enhance the utilization of the direct methanol fuel cell.

Regarding claim 46, Wariishi does not specifically teach that the distribution chamber and the collecting chamber in the third layer are intended for first flow, and wherein the fuel cell comprises a fifth layer provided with a second distribution chamber and a second collecting chamber, which second chambers are intended for a second flow.

However, Ren teaches a fuel cell that can also be incorporated into fuel cell stacks (col. 1, lines 29-35) with a third layer at least partly defining limiting surfaces for the distribution chamber/opening space in compression reinforcement bar (28); and further teaches a fifth layer (compression bar 29) with a two openings (one for the collection chamber and one for the distribution chamber), where the openings of the chamber are used for a second flow.

Therefore, it would have been obvious to one of ordinary skill in the art would to incorporate a fifth layer in the fuel cell system of Wariishi, because Ren teaches a fifth layer is needed to provide a second distribution chamber and collecting chamber in another direction allows the fuel cell stack to function.

Regarding claim 53, Wariishi does not specifically teach wherein the system of flow ducts comprises a coolant distribution system, and wherein the cooling chamber is arranged the at least one further layer.

However, Ren teaches a third layer with a distribution chamber/opening space in compression reinforcement bar (28) where the openings are defined for receiving an incoming and outgoing flow (see col. 3, line 59- col. 4, line 2; fig. 1)

Therefore, it would have been obvious to one with ordinary skill in the art to incorporate the layers with openings in the fuel cell of Wariishi, because Ren teaches that this opening structure between the layers of the fuel cell system allows for the flow communication between the layers (see col. 3, lines 58-66).

Ren does not specifically teach that the third layer contains a cooling chamber.

However, Ren'964 teaches a fuel cell stack where cooling plates are periodically interspersed between parts of the fuel cell assembly (coolant distribution system) and that coolant is distributed in some manner across the cooling plates through bipolar plates in order to enhance the utilization of the direct methanol fuel cell (see col. 2, lines 16-20, col. 4, lines 29-37). Consequently, incorporation of a cooling chamber/bipolar plate to the fuel cell of Ren would be effective because it would enhance the utilization of the direct methanol fuel cell.

Therefore, it would have been obvious to one with ordinary skill in the art to incorporate a coolant distribution system with a cooling chamber in the third layer of Ren, because Ren'964 teaches that adding a cooling chamber to a part of the fuel cell assembly would enhance the utilization of the direct methanol fuel cell.

Regarding claim 54, Wariishi does not specifically teach wherein the cooling chamber comprises at least partly a through-cutout in the at least one further layer and

wherein the second layer at least partly defines a limiting surface for the cooling chamber.

However, Ren teaches a third layer with a distribution chamber/opening space in compression reinforcement bar (28) where the openings are defined for receiving an incoming and outgoing flow with a second layer (22) that defines a boundary on one side (one direction/delimiting surface) of the distribution chamber and the collecting chamber (third layer 28) (see col. 3, line 59- col. 4, line 2; fig. 1)

Therefore, it would have been obvious to one with ordinary skill in the art to incorporate this arrangement of parts to the fuel cell system of Wariishi, because Ren teaches that this arrangement describes a working direct methanol fuel cell (see col. 1, line 63-col. 2, line 6).

Ren does not specifically teach that the cooling chamber comprises at least partly a through-cutout in the at least one further layer.

However, Ren'964 teaches a fuel cell stack where cooling plates are periodically interspersed between parts of the fuel cell assembly and that coolant is distributed in some manner across the cooling plates through bipolar plates in order to enhance the utilization of the direct methanol fuel cell (see col. 2, lines 16-20, col. 4, lines 29-37). It can be seen from fig. 4 that the cooling plates (14) have perforations (through holes 12) for the distribution of fluid flow (see col. 4, lines 16-28). Consequently, incorporation of a cooling chamber/bipolar plate to the fuel cell of Ren would be effective because it would enhance the utilization of the direct methanol fuel cell.

Therefore, it would have been obvious to one with ordinary skill in the art to incorporate a cooling chamber with further perforations (through holes) in the third layer of Ren, because Ren'964 teaches that adding a cooling chamber to a part of the fuel cell assembly would enhance the utilization of the direct methanol fuel cell and permit the fluid flow of coolant through the fuel cell system. Further, if the cooling chamber was incorporated into the third layer of Ren, it would inherently have the second layer defining a limiting surface for the cooling chamber.

Regarding claim 55, Wariishi and Ren do not specifically teach that the cooling chamber is provided with a conductor adapted to conduct electric current through the cooling chamber.

However, Ren'964 teaches a fuel cell with a cooling chamber (14) is provided with a conductor (bipolar plates 18) that are adapted to conduct electric current through the cooling chamber (col. 4, lines 29-37).

Therefore, it would have been obvious to one with ordinary skill in the art to incorporate a cooling chamber with a conductor in the fuel cell system of Wariishi, because Ren'964 teaches that provided a conductor in the cooling chamber permits the conduction of electric current through the fuel cell system.

Regarding claim 56, Wariishi does not specifically teach that the conductor is resilient.

However, Ren teaches that the current collector (conductor 18) is corrugated into folds or ridges and valleys to give the metal current collectors mechanical strength

(resilience) against bending stress arising from compressing the MEA, and the perforations allow for reactants to reach the catalyst layers (see col. 3, lines 38-48).

Therefore, it would have been obvious to one with ordinary skill in the art to incorporate metal current collectors with corrugations as conductors in the fuel cell system of Wariishi, because Ren teaches that these corrugations of valleys and ridges are used for a strong mechanical strength in the fuel cell system.

Regarding claim 57, Wariishi and Ren do not specifically teach wherein the conductor provides a flow patter for increased cooling effect relative to a cooling effect with no conductor.

However, Ren’964 teaches a fuel cell, wherein the conductor provides a flow pattern for increased cooling effect relative (col. 4, lines 29-37). Further, Ren’964 teaches that the even distribution of fluid flow enhances fluids within the flow channels to contact the surfaces of the electrodes through the corrugated sheets to provide a larger surface area (see col. 4, lines 24-37). It is inherent that a cooling effect would be better with a conductor than without a conductor, because the coolant flow would be forced to flow through the fuel cell stack due to the electric current provided by the conductor (see col. 4, lines 24-28).

Therefore, it would have been obvious to one with ordinary skill in the art to incorporate a conductor with a flow pattern (perforations) in the fuel cell system of Wariishi, because Ren'964 teaches that the conductor helps with the flow of coolant throughout the fuel cell system.

6. Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wariishi in view of Ren and in further view of Okamura et al. (U.S. Pat. No. 5,240,785) (hereinafter "Okamura").

Regarding claim 52, Wariishi and Ren do not specifically teach that the conductor is comprises a net structure.

However, Okamura teaches that the current collector (conductor) comprises a net structure (mesh) to allow reactants to pass through the current collector (col. 3, lines 19-27).

Therefore, it would have been obvious to one with ordinary skill in the art to incorporate a net structure as the conductor of Wariishi, because Okamura teaches that this type of conductor will allow reactants to pass through the current collector.

7. Claim 58 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wariishi, Ren and Ren '964 and in further view of Okamura et al. (U.S. Pat. No. 5,240,785) (hereinafter "Okamura").

Regarding claim 58, Wariishi, Ren and Ren'964 do not specifically teach that the conductor is comprises a net structure.

However, Okamura teaches that the current collector (conductor) comprises a net structure (mesh) to allow reactants to pass through the current collector (col. 3, lines 19-27).

Therefore, it would have been obvious to one with ordinary skill in the art to incorporate a net structure as the conductor of Wariishi, because Okamura teaches that this type of conductor will allow reactants to pass through the current collector.

Response to Arguments

8. Applicant's arguments filed October 20, 2010 have been fully considered but they are not persuasive.

Applicant's principal arguments are:

(a) that Wariishi et al. and Ren et al. '479 are not combinable and that it would not be necessary for Ren et al.'479 to have an outlet region.

(b)Wariishi et al. does not teach that the stream flows straight to the outlet.

In response to Applicant's argument, please consider the following comment.

(a) Wariishi et al. teaches a fuel cell (see abstract). Ren et al. '479 teaches a fuel cell (see abstract). Further, Ren et al. '479 that the some of the perforations allow for the reaction product to leave the catalyst layer (i.e. outlet region) (see col. 3, lines 43-53). Applicant argues that the fuel flows over half of the entire surface area. However, the claim limitation reads "that at least one of the inlet and the outlet region extends along at least approximately half of an extent of at least one of the anode active surface and the cathode active surface. Therefore, the perforations account for 50%

(half) of the inlet and outlet regions on the anode active surface and the cathode active surface (see col. 3, lines 43-53). The whole plates (22 and 24) are the inlet and outlet regions, which makes half of the openings inlet and the other half outlet on the cathode active surface areas and the anode active surface areas.

"The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.... Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art." In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). See also In re Sneed, 710 F.2d 1544, 1550, 218 USPQ 385, 389 (Fed. Cir. 1983) ("[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review."); and In re Nievelt, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973) ("Combining the teachings of references does not involve an ability to combine their specific structures.").

(b) Applicant does not claim that the fuel flow streams straight from the inlet to the outlet. Applicant claims that the first flow, containing the first reactant is in contact with the anode active surface, and is distributed to flow to a cell space at least partially defined by at least one of the anode active surface uniformly over an inlet region, which extends along the at least one anode surface, and the system of flow ducts comprises a collecting arrangement adapted to allow flow outgoing from the cell space within an outlet region separate from the inlet region. The Examiner interprets the claim to read that the inlet and outlet region are separate and that it is all within a cell space. A cell

space is any region around the cell. Therefore, the supply passages (system of flow ducts 50, 52, 54, 56, 58 and 60) that bring in the reactants and contact the active surfaces are also able to flow outgoing (56, 58 and 60) from the cell space and are separate from the inlet regions (50, 52 and 54).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PATRICIA DAVIS whose telephone number is (571)270-

7868. The examiner can normally be reached on 7:30am-5pm EST. Monday-Friday, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ula Ruddock can be reached on 571-272-1481. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PATRICIA DAVIS/
Examiner, Art Unit 1729

/Ula C Ruddock/
Supervisory Patent Examiner, Art Unit 1795